



STANDARD OPERATING PROCEDURES

SOP: 2049
PAGE: 1 of 9
REV: 0.0
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INVESTIGATION-DERIVED WASTE MANAGEMENT

CONTENTS

- 1.0 SCOPE AND APPLICATION
- 2.0 METHOD SUMMARY
- 3.0 SAMPLE PRESERVATION, CONTAINERS, HANDLING AND STORAGE
- 4.0 INTERFERENCES AND POTENTIAL PROBLEMS
- 5.0 EQUIPMENT/APPARATUS
 - 5.1 Waste Disposal
 - 5.2 Decontamination Equipment
- 6.0 REAGENTS
- 7.0 PROCEDURES
 - 7.1 Regulatory Background and Options for Management of IDW
 - 7.2 Identification of IDW
 - 7.3 Management of IDW
 - 7.3.1 Waste Minimization
 - 7.3.2 Types, Hazards, and Quantities of IDW
 - 7.3.3 On-Site IDW Handling Options
 - 7.3.4 Off-Site Disposal of IDW Options
- 8.0 CALCULATIONS
- 9.0 QUALITY ASSURANCE/QUALITY CONTROL
- 10.0 DATA VALIDATION
- 11.0 HEALTH AND SAFETY
- 12.0 REFERENCES



STANDARD OPERATING PROCEDURES

SOP: 2049
PAGE: 2 of 9
REV: 0.0
DATE: 10/21/94

INVESTIGATION-DERIVED WASTE MANAGEMENT

1.0 SCOPE AND APPLICATION

The objective of this standard operating procedure (SOP) is to provide general reference information on management of investigation-derived wastes (IDW) generated during SERAS site investigations. IDW includes soil cuttings, drilling muds, purged groundwater, decontamination fluids (water and other fluids), disposable sampling equipment, and disposable personal protective equipment (PPE).

This SOP is applicable only if the U.S. Environmental Protection Agency (U.S. EPA) On-Scene Coordinator, Remedial Project Manager, or other Regional Manager does not have procedures in place for IDW management.

These are standard (i.e., typically applicable) operating procedures which may be varied or changed as required, dependent upon site conditions, equipment limitations or limitations imposed by the procedure. In all instances, the ultimate procedures employed should be documented and associated with the final report.

Mention of trade names or commercial products does not constitute U.S. EPA endorsement or recommendation for use.

2.0 METHOD SUMMARY

Prior to site activities, the Task Leader should determine if the On-Scene Coordinator, Remedial Project Manager, or other Regional Manager has procedures in place for IDW management. This should be done by contacting the Work Assignment Manager.

If it is determined that procedures are not in place, then the Task Leader should evaluate IDW handling and management options based on:

- The site contaminants and their concentrations, and total projected volume of IDW.
- Media potentially affected (e.g., groundwater, soil) by management options.
- Location of the nearest population(s) and likelihood and/or degree of site access.
- Potential exposure to workers.
- Potential environmental impacts.

Every effort must be made to ensure the selection of investigation method(s) that minimize the generation of IDW, contact with contaminants, and cost of disposal. Efforts made to characterize IDW shall be consistent with the scope and purpose of the site investigation.

The QA Work Plan describing the anticipated approach and procedures for IDW management shall be clear, detailed, and concise. Any deviation or modification due to unexpected and unforeseen field conditions will be noted in the site logbook.

3.0 SAMPLE PRESERVATION, CONTAINERS, HANDLING AND STORAGE

This section is not applicable to this SOP.

4.0 INTERFERENCES AND POTENTIAL PROBLEMS

IDW can be contaminated with various hazardous substances. To handle IDW in compliance with



STANDARD OPERATING PROCEDURES

SOP: 2049
PAGE: 3 of 9
REV: 0.0
DATE: 10/21/94

INVESTIGATION-DERIVED WASTE MANAGEMENT

regulations, reasonable efforts should be made to characterize the wastes.

5.0 EQUIPMENT/APPARATUS

Equipment, materials, and supplies needed for containerizing IDW are generally selected based on waste characteristics or constituents. Other considerations include the case of decontaminating or disposing of the equipment. Most equipment and supplies can be easily procured. For example, 5-gallon buckets, plastic bags, etc. can help segregate contaminated materials. Contaminated liquid can be stored temporarily in metal or plastic cans or drums.

5.1 Waste Disposal

- Trash bags
- Trash containers
- 55-gallon drums or 5-gallon pails
- Metal/plastic buckets/containers for storage and disposal of decontamination solutions

5.2 Decontamination Equipment

- Drop cloths of plastic or other suitable materials
- Large galvanized tubs
- Wash solutions
- Rinse solutions
- Long-handled, soft-bristled brushes
- Paper or cloth towels
- Metal or plastic cans or drums
- Soap or wash solution

6.0 REAGENTS

There are no reagents used in this procedure aside from decontamination solutions. In general, the following solvents are typically utilized for decontamination purposes:

- 10% nitric acid
- Acetone (pesticide grade)
- Hexane (pesticide grade)
- Methanol

7.0 PROCEDURES



STANDARD OPERATING PROCEDURES

SOP: 2049
PAGE: 4 of 9
REV: 0.0
DATE: 10/21/94

INVESTIGATION-DERIVED WASTE MANAGEMENT

7.1 Regulatory Background and Options for Management of IDW

This SOP is based on the following guidance document:

OERR Directive 9345.3-02, "Management of Investigation-Derived Wastes During Site Inspections," May 1991.

The guidance document presents a general regulatory background and options for management of IDW generated during Superfund site activities. IDW includes soil cuttings, drilling muds, purged groundwater, decontamination fluids (water and other fluids), disposable sampling equipment and disposable PPE. The National Contingency Plan (NCP) requires that management of IDW generated during site investigations complies with all applicable or relevant and appropriate requirements (ARARs) to the extent practicable. In addition, other legal and practical considerations may affect the handling of IDW.

IDW from site inspections may contain hazardous substances as defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Some CERCLA hazardous substances are hazardous wastes under Subtitle C of the Resource Conservation and Recovery Act (RCRA), while other substances are regulated by other federal laws such as the Safe Drinking Water Act (SDWA), Clean Air Act (CAA), Toxic Substances Control Act (TSCA), and the Clean Water Act (CWA). The U.S. EPA estimates that RCRA hazardous IDW have been generated at fewer than 15% of CERCLA sites. However, RCRA regulations, and in particular the RCRA Land Disposal Restrictions, are very important as potential ARARs since they regulate treatment, storage, and disposal of many of the most toxic and hazardous materials.

The U.S. EPA's strategy for managing RCRA hazardous IDW is based on:

- The NCP directive that site investigations comply with ARARs to the extent practicable.
- The area of contamination (AOC) unit concept.

The most important general elements of managing IDW are as follows:

- Leaving a site in no worse condition than existed prior to the investigation.
- Removing those wastes that pose an immediate threat to human health or the environment.
- Leaving on site those wastes that do not require off-site disposal or long-term above-ground containerization.
- Complying with federal and state ARARs to the extent practicable.
- Planning and coordination for IDW management.
- Minimizing the quantity of wastes generated.

The specific elements of the approach are as follows:

- Characterizing IDW through the use of existing information (manifests, Material Safety Data Sheets, previous test results, knowledge of the waste generation process, and other relevant records) and best professional judgment.
- Delineating an AOC unit for leaving RCRA hazardous soil cuttings within the unit.
- Containerizing and disposing of RCRA hazardous groundwater, decontamination fluids, PPE, and disposable sampling equipment (if generated in excess of 100 kg/month) at RCRA Subtitle C facilities.
- Leaving on site RCRA nonhazardous soil cuttings, groundwater, and decontamination fluids



STANDARD OPERATING PROCEDURES

SOP: 2049
PAGE: 5 of 9
REV: 0.0
DATE: 10/21/94

INVESTIGATION-DERIVED WASTE MANAGEMENT

preferably without containerization and testing.

The U.S. EPA does not recommend the removal of wastes from all sites and, in particular, from those sites where IDW does not pose any immediate threat to human health or the environment.

Based on this information and the guidelines included in the following sections, the SERAS Task Leader should include a plan for handling IDW in the QA Work Plan. Any deviations from or modifications to the plan due to unexpected or unforeseen field conditions must be noted in the site logbook.

7.2 Identification of IDW

To handle IDW properly, the Task Leader must know whether it contains CERCLA hazardous substances and whether these substances are RCRA hazardous wastes or contaminants regulated under other statutes. To handle IDW in compliance with regulations, reasonable efforts should be made to characterize them. However, these efforts should be consistent with the scope and purpose of the site investigation.

In particular, extensive testing is not warranted in most cases; instead, the nature of the wastes should be assessed by applying professional judgment, using readily available information about the site (such as manifests, storage reports, preliminary assessments, and results of earlier studies), as well as direct observation of the wastes for discoloration, odor, or other indicators of contamination. Similarly, RCRA procedures for determining whether a waste exhibits RCRA hazardous characteristics do not require testing if the decision can be made by applying knowledge of the characteristic in light of the materials or process used. In most instances, a determination may be made based on available information and professional judgment. This does not mean that IDW can be assumed to be nonhazardous unless clearly proven otherwise. Given the limited information available, the Task Leader, in conjunction with the Work Assignment Manager, must determine whether it more likely than not that the wastes are hazardous.

Even if the IDW do not contain RCRA hazardous waste, the Task Leader should determine whether they contain other CERCLA hazardous substances. CERCLA hazardous substances include, in addition to RCRA hazardous wastes, substances, elements, compounds, solutions, or mixtures designated as hazardous or toxic under CERCLA itself or under the authority of other laws such as TSCA, CWA, CAA, and SDWA. Therefore, even if RCRA is not applicable, one of these statutes may be.

IDW may include, but is not limited to, the following items:

Solid Waste

- Soil
- Sediment
- Sludge/slag
- Drum solids
- Drill cuttings
- Used glassware
- Dedicated/expendable equipment (bailers, fitters, hose, buckets, XRF cups, etc.)
- Biological tissue
- Clean trash



STANDARD OPERATING PROCEDURES

SOP: 2049
PAGE: 6 of 9
REV: 0.0
DATE: 10/21/94

INVESTIGATION-DERIVED WASTE MANAGEMENT

- PPE
- Decontamination equipment (buckets, brushes, clothing, tools, etc.)
- Field analytics waste (immunoassay, chlor-n-oil, chlor-in-soil, HACH kits, sample extracts, etc.)

Aqueous Waste

- Drilling fluids
- Purge water
- Development water
- Decontamination fluids

7.3 Management of IDW

7.3.1 Waste Minimization

The Task Leader should select site investigation methods that minimize the generation of IDW, particularly RCRA hazardous wastes. The site investigation team should limit contact with contaminants and use drilling and decontamination methods (such as steam cleaning) that minimize PPE, disposable equipment, decontamination fluids, and soil cuttings. In particular, the inspection team should minimize the amounts of solvents used for decontamination or eliminate solvents altogether. Minimizing the amount of wastes generated reduces the number of IDW handling problems and costs of disposal.

7.3.2 Types, Hazards, and Quantities of IDW

To handle IDW properly, the Task Leader must determine the types (such as soil cuttings, groundwater, decontamination fluids, PPE, or disposable equipment), characteristics (whether RCRA hazardous or containing other CERCLA hazardous substances), and quantities of anticipated wastes. As discussed previously, testing will generally not be required to characterize waste.

Upon determining the types of anticipated IDW, the Task Leader should determine IDW characteristics, in particular whether it is expected to be RCRA hazardous or to contain high concentrations of PCBs. For RCRA hazardous IDW, the Task Leader should determine whether it poses an increased hazard to human health and the environment relative to conditions that existed prior to the site investigation. Field analytical screening results, if available, may be helpful indicators of IDW characteristics. However, the Task Leader must remember that these are not RCRA tests and that the test results usually do not identify RCRA hazardous wastes. The Task Leader must also determine the exact properties of RCRA nonhazardous IDW to select an appropriate disposal facility when the off-site disposal is required.

Upon determining the type and characteristics of IDW to be generated, the Task Leader must assess the anticipated quantities of waste. This should be done based on past experience with site investigations of similar scope.

7.3.3 On-Site IDW Handling Options

In planning the scope of work, the Task Leader must decide if IDW can be left on site or



STANDARD OPERATING PROCEDURES

SOP: 2049
PAGE: 7 of 9
REV: 0.0
DATE: 10/21/94

INVESTIGATION-DERIVED WASTE MANAGEMENT

if it must be disposed off site.

Handling of RCRA hazardous IDW and IDW with high PCB concentrations (greater than 50 ppm) may involve either moving the IDW within an AOC unit, or containerization, storage, testing, treatment, and off-site disposal. Handling of RCRA nonhazardous IDW usually involves various methods of on-site disposal. It is preferable to leave both RCRA hazardous and nonhazardous IDW on site whenever it complies with regulations and does not pose any immediate threat to human health and the environment.

If IDW are RCRA nonhazardous soil or water, they should be left on site unless other circumstances, such as state ARARs or a high probability of serious community concerns, require off-site disposal. RCRA hazardous soil also may be left on site within an AOC unit. The Task Leader must determine procedures for handling IDW on site in conjunction with the Work Assignment Manager.

The on-site handling options available to the Task Leader when IDW are RCRA nonhazardous are listed below.

For soil cuttings:

1. Spread around the well.
2. Put back into the boring.
3. Put into a pit within the AOC.
4. Dispose of at the site's operating treatment/disposal unit (TDU).

For groundwater:

1. Pour onto ground next to well to allow infiltration.
2. Dispose of at the site's TDU.

For decontamination fluids:

1. Pour onto ground (from containers) to allow infiltration.
2. Dispose of at the site's TDU.

For decontaminated PPE and disposable equipment:

1. Double bag and deposit in the site or U.S. EPA dumpster, or in any municipal landfill.
2. Dispose of at the site's TDU.

If IDW are considered RCRA nonhazardous due to lack of information on the waste hazard, the Task Leader should have an alternate plan for handling IDW if field conditions indicate that these wastes are hazardous. In such a case, there should be an adequate number of containers available for collecting groundwater, decontamination water, soil cuttings, etc.

If IDW consists of RCRA hazardous soils that pose no immediate threat to human health and the environment, the Task Leader should plan on leaving it on site within a delineated AOC unit. However, the Task Leader must consider the proximity of



STANDARD OPERATING PROCEDURES

SOP: 2049
PAGE: 8 of 9
REV: 0.0
DATE: 10/21/94

INVESTIGATION-DERIVED WASTE MANAGEMENT

residents and workers in the surrounding area and use best professional judgment to make these decisions. Planning for leaving RCRA hazardous waste on site involves:

- Delineating the AOC unit.
- Determining pit locations close to the borings within the AOC unit for waste burial.
- Covering hazardous IDW in the pits with surficial soil.
- Not containerizing and testing wastes designated to be left on site.

Another alternative for handling RCRA hazardous soil is disposal in a TDU located on the same property as the AOC under investigation. If the TDU is outside the AOC, it must comply with the off-site policy. If any decontamination fluids are generated which are RCRA hazardous wastes, they should be disposed of off site in compliance with the off-site policy or in compliance with the conditionally exempt small quantity generator exemption. Small quantities (i.e., no more than 100 kg/month) of decontamination fluids may be containerized prior to delivery to a hazardous waste facility.

7.3.4 Off-Site Disposal of IDW Options

IDW should be disposed of off site in the following situations:

- When they are RCRA hazardous water.
- When they are RCRA hazardous soil that may pose a substantial risk if left at the site.
- When they are RCRA hazardous PPE and disposable equipment.
- If leaving them on site would create increased risks at the site.

RCRA nonhazardous wastes could be disposed of off-site at appropriate RCRA nonhazardous facilities that are in compliance with CERCLA section 121(d)(3) and off-site policy when it is necessary to comply with legally enforceable requirements such as state ARARs that preclude on-site disposal. IDW designated for off-site disposal must be properly containerized, tested, and stored before pick up and disposal. Decontaminated PPE and disposable equipment should be double-bagged if sent to an off-site dumpster or municipal landfill.

Planning for off-site disposal should include the following guidelines:

- Informing the Work Assignment Manager that containerized IDW may be temporarily stored on site while awaiting pick up for off-site disposal.
- Initiating the procurement process for IDW testing, pick up and disposal.
- Coordinating IDW testing and pick-up activities.
- Preparing adequate numbers and types of containers. Drums should be used for collecting small amounts of IDW. Larger amounts of soil and water can be contained in Baker tanks, poly tanks, and bins. PPE and disposable equipment should be double-bagged for disposal at a municipal landfill or collected in drums for disposal at a hazardous waste facility.
- Designating a storage area (either within the site's existing storage facility, existing fenced area, or within a temporary fence constructed for the site investigation). No humans, children in particular, may have access to the storage area.

All IDW shipped off site, whether RCRA hazardous or not, must go to facilities that comply with the RCRA disposal policy, and the Task Leader, in conjunction with the



STANDARD OPERATING PROCEDURES

SOP: 2049
PAGE: 9 of 9
REV: 0.0
DATE: 10/21/94

INVESTIGATION-DERIVED WASTE MANAGEMENT

SERAS Purchasing Department, must verify that the facilities operate in accordance with this policy.

8.0 CALCULATIONS

This section is not applicable to this SOP.

9.0 QUALITY ASSURANCE/QUALITY CONTROL

- a. There are no specific quality assurance activities which apply to the implementation of these procedures. However all IDW disposal information must be documented within site logbooks. Additionally, all shipping and transport of hazardous and nonhazardous samples will comply with Department of Transportation (DOT) and International Air Transport Association (IATA) regulations. For additional information regarding sample handling procedures refer to ERT/SERAS SOP #2003, Sample Storage, Preservation, and Handling.

10.0 DATA VALIDATION

This section is not applicable to this SOP.

11.0 HEALTH AND SAFETY

When working with potentially hazardous materials, follow U.S. EPA, OSHA and corporate health and safety procedures.

12.0 REFERENCES

U.S. EPA, Guide to Management of Investigation Derived Wastes, OERR Directive 9345.3.03FS, January 1992.

U.S. EPA, Management of Investigations - Derived Wastes During Site Inspections, OERR Directive 9345.3-02, May 1991.

Code of Federal Regulations (CFR), Title 40, Part 261, Section 23, Section 11 (a) (3), and Section 24 (a) (b).

CFR Proposed Criteria: 51 FR 21685, June 30, 1986 and 51 FR 21450, May 20, 1992.